This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

OIPE JC14
JUN 04 2004
PATENT & TRADEMARK OFFICE

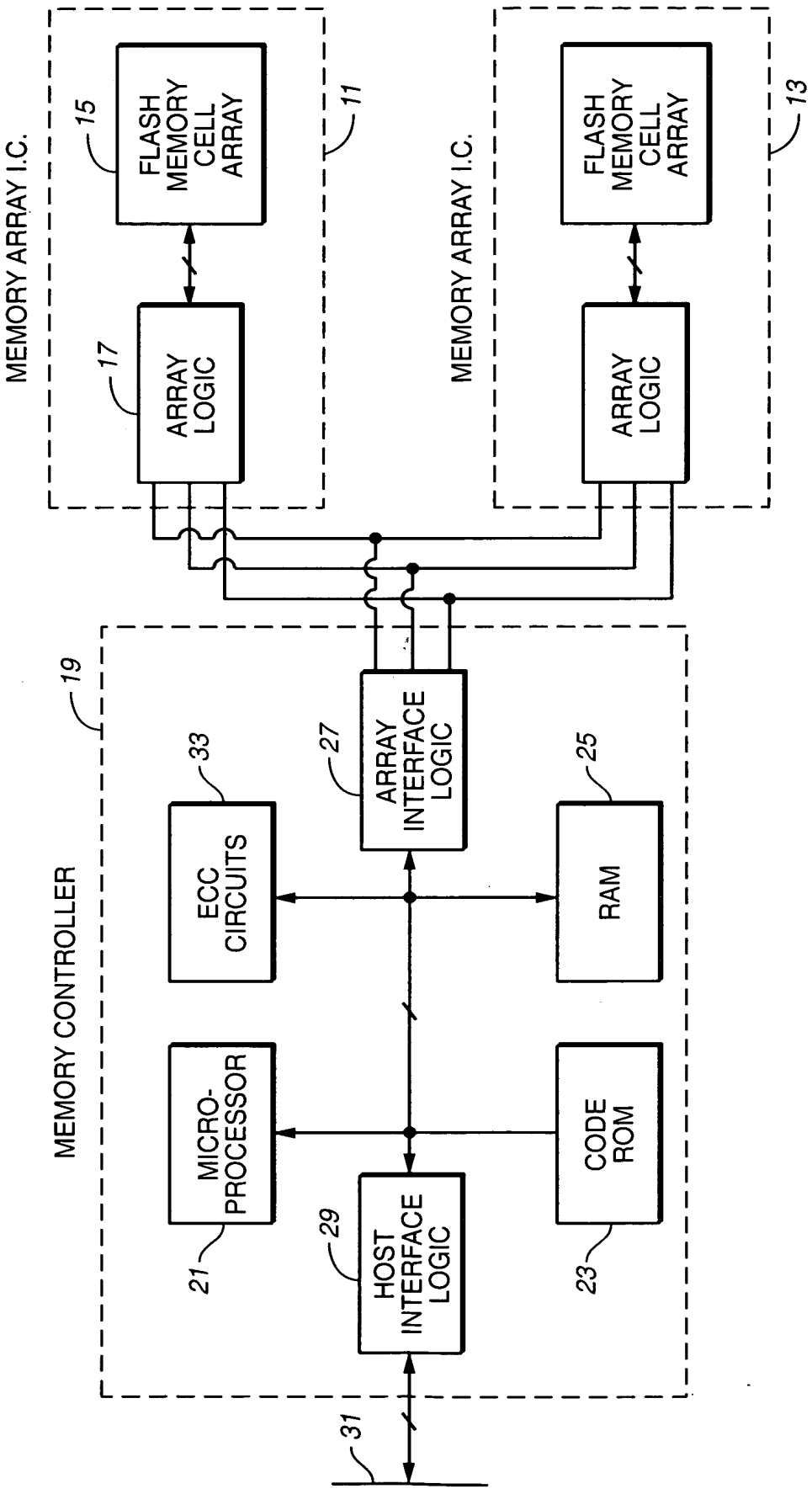

FIG._1A

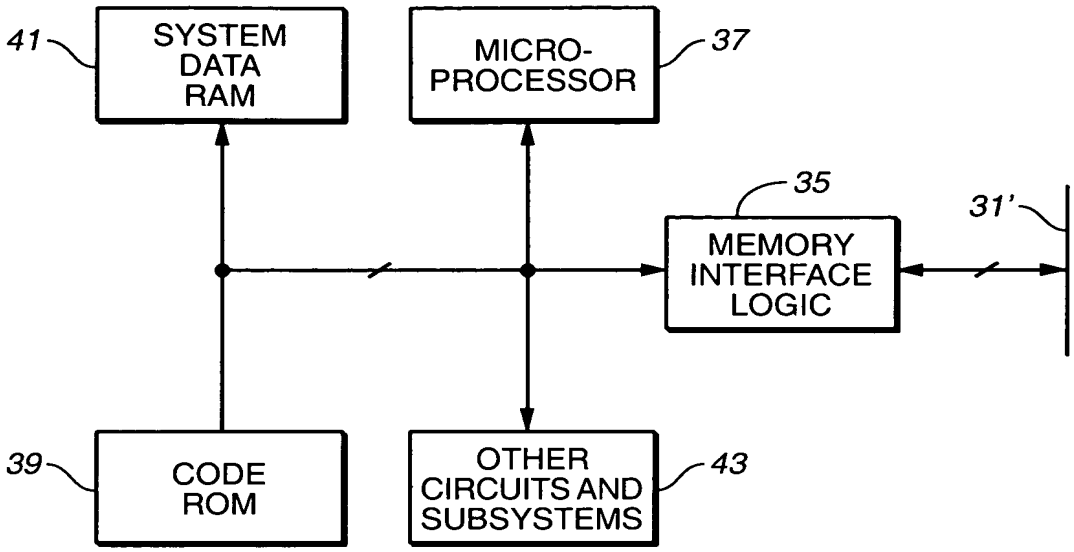

FIG._1B

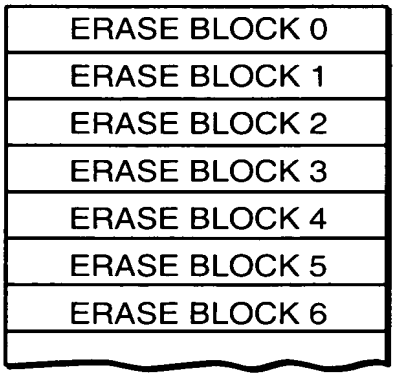

FIG._2

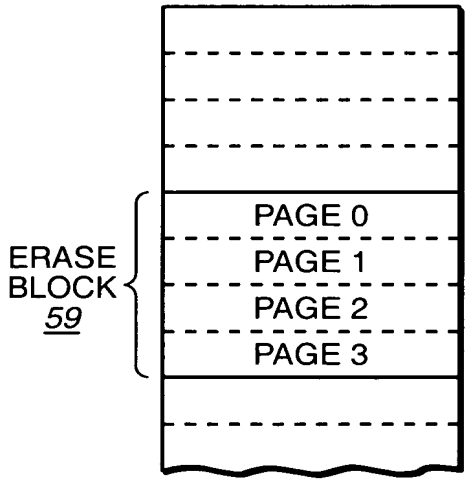

FIG._4

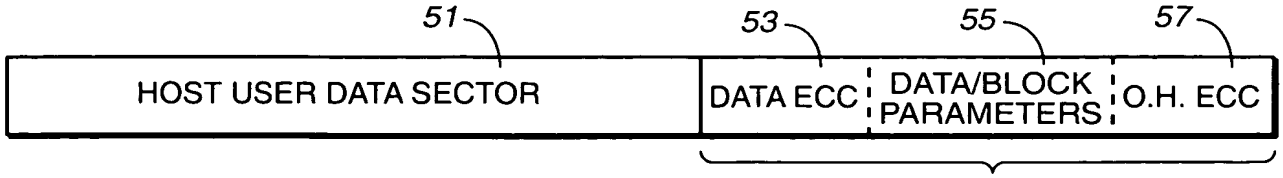

FIG._3

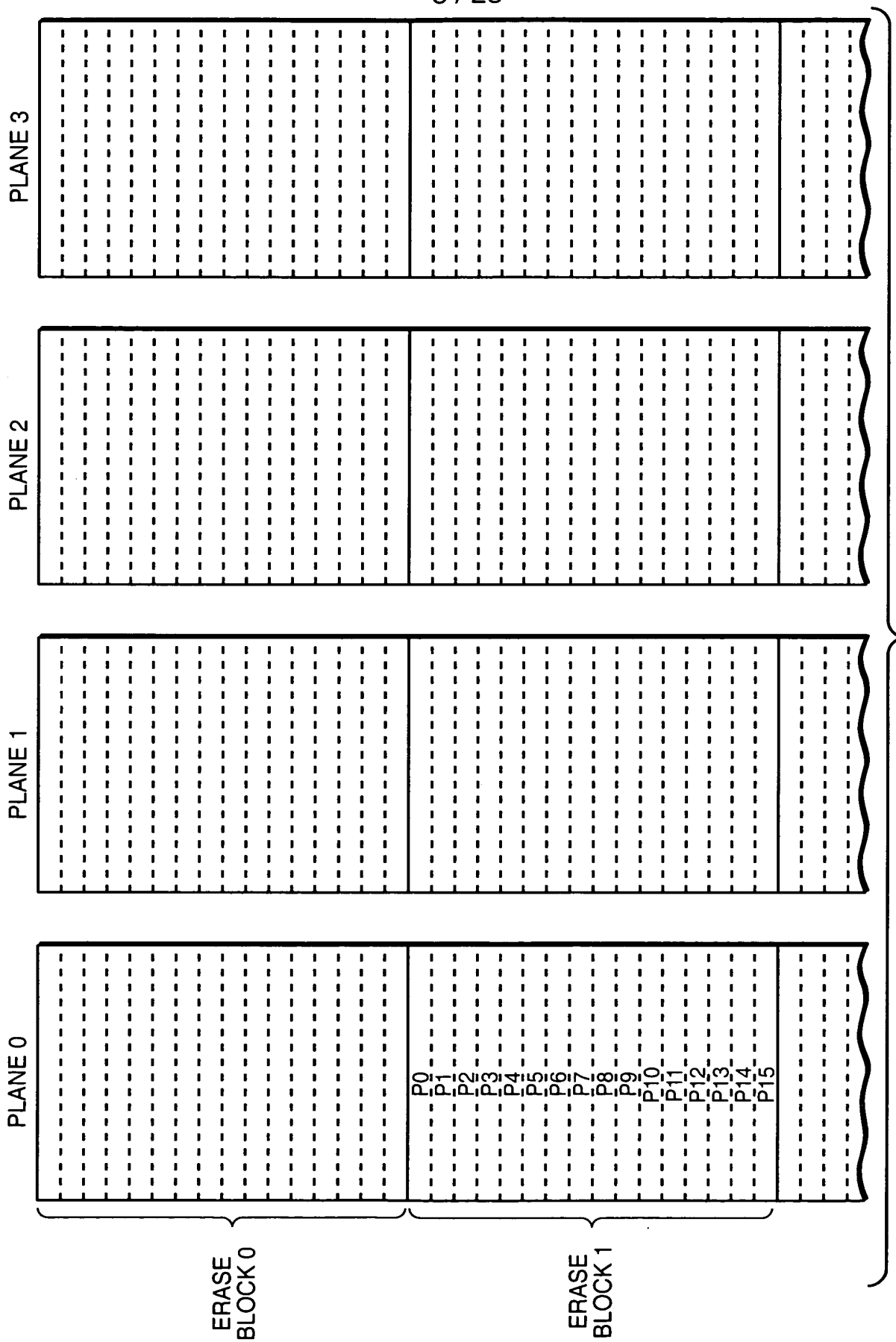
PLANE 3
PLANE 2
PLANE 1
PLANE 0
P0
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
ERASE BLOCK 0
ERASE BLOCK 1

FIG._5

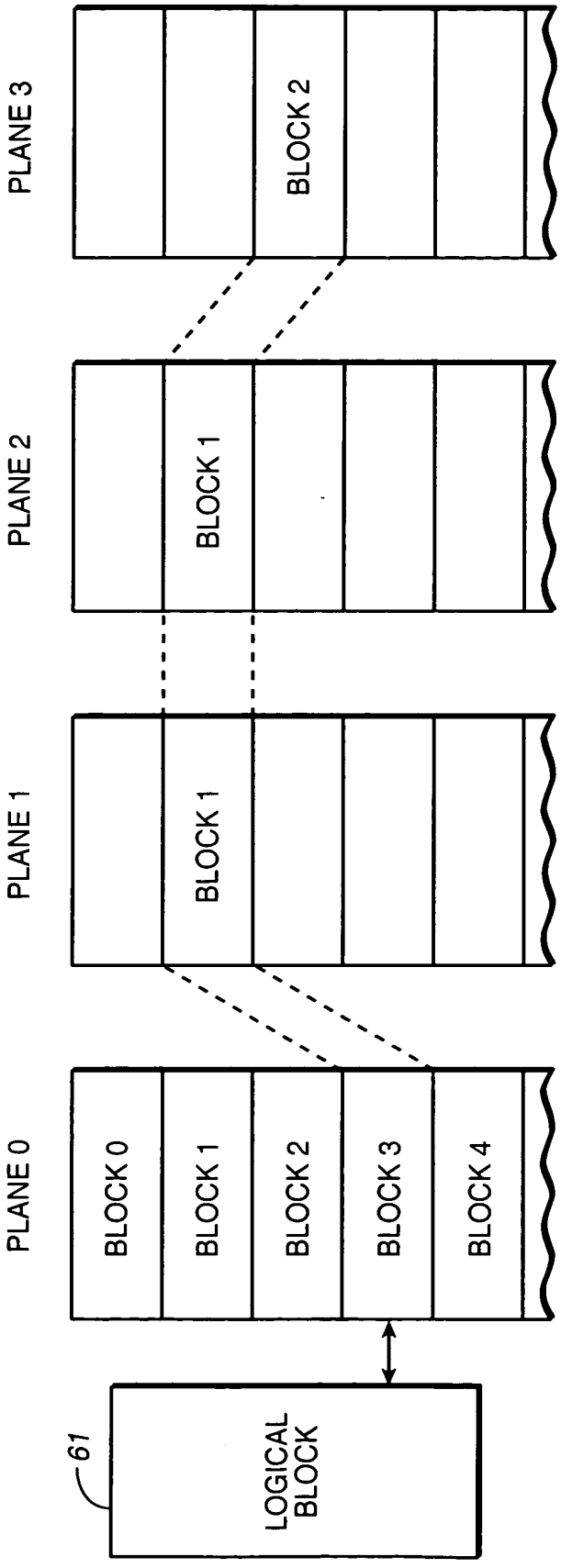
PLANE 3
BLOCK 2
PLANE 2
BLOCK 1
PLANE 1
BLOCK 1
PLANE 0
BLOCK 0
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
61
LOGICAL BLOCK

FIG._6

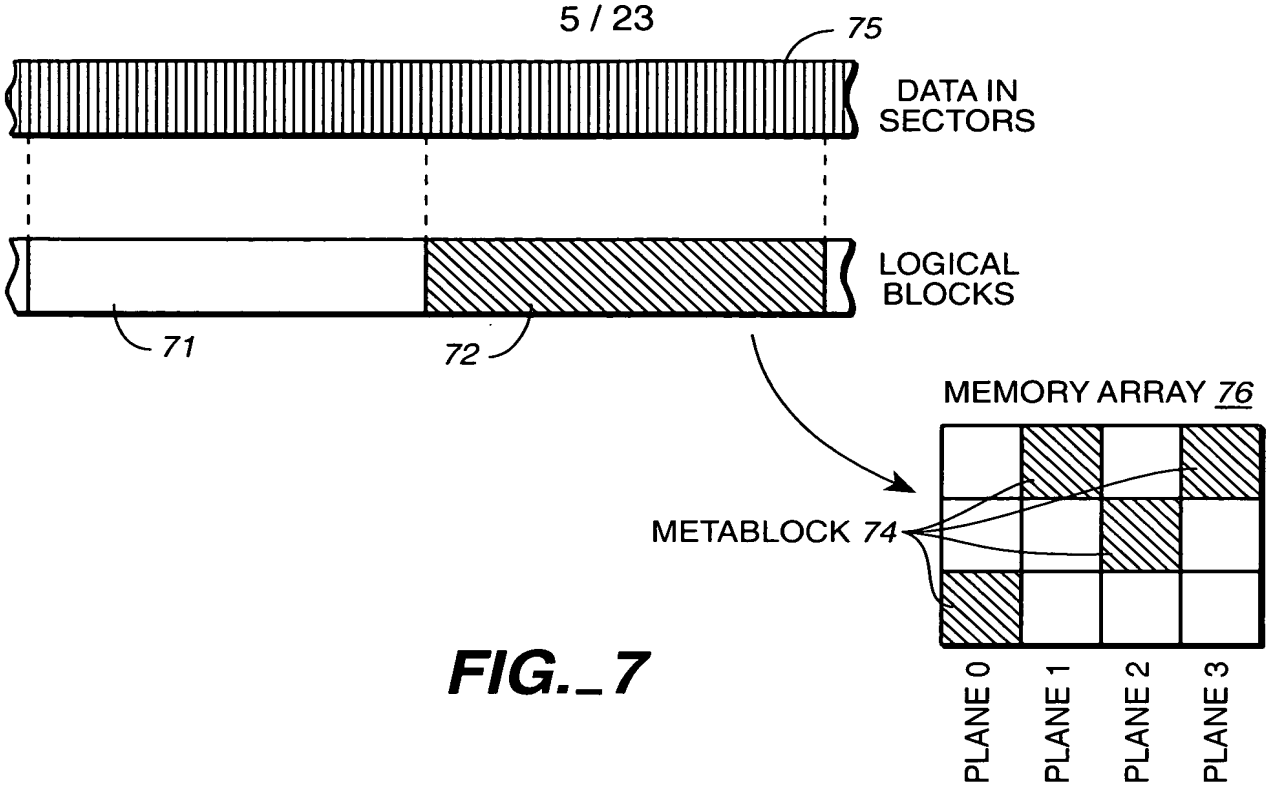
75
DATA IN SECTORS
LOGICAL BLOCKS
71
72
MEMORY ARRAY 76
METABLOCK 74
PLANE 0
PLANE 1
PLANE 2
PLANE 3

FIG._7

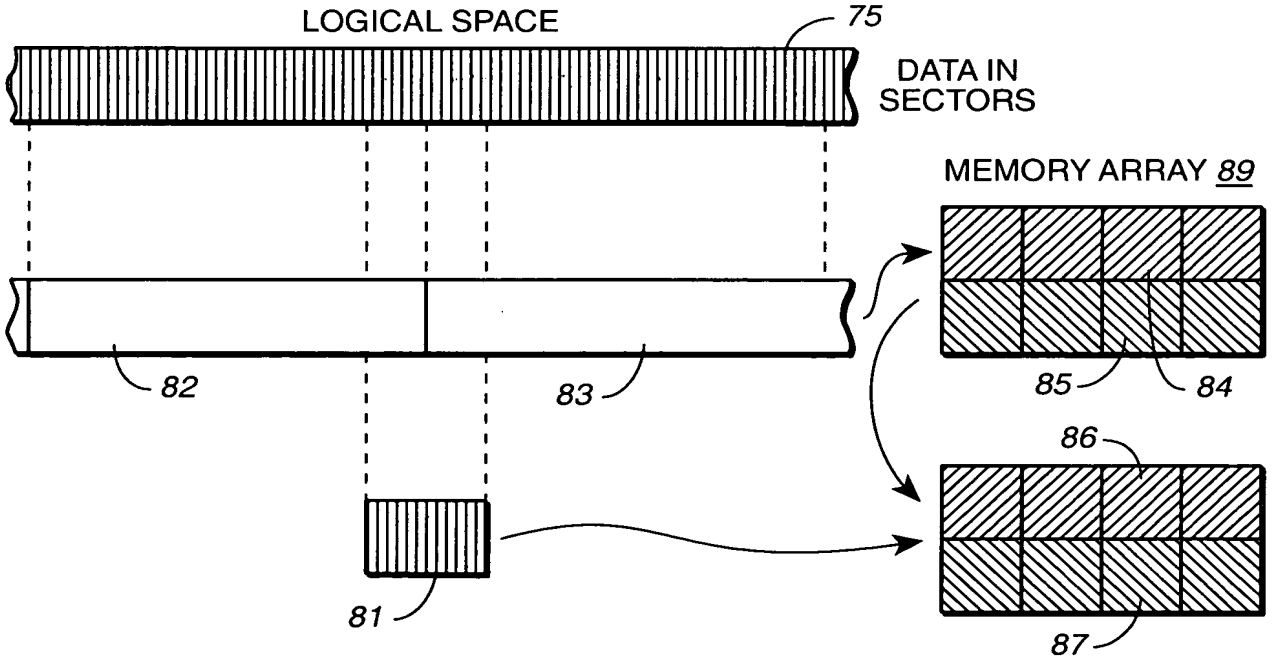
LOGICAL SPACE
75
DATA IN SECTORS
MEMORY ARRAY 89
82
83
85
84
86
81
87

FIG._8

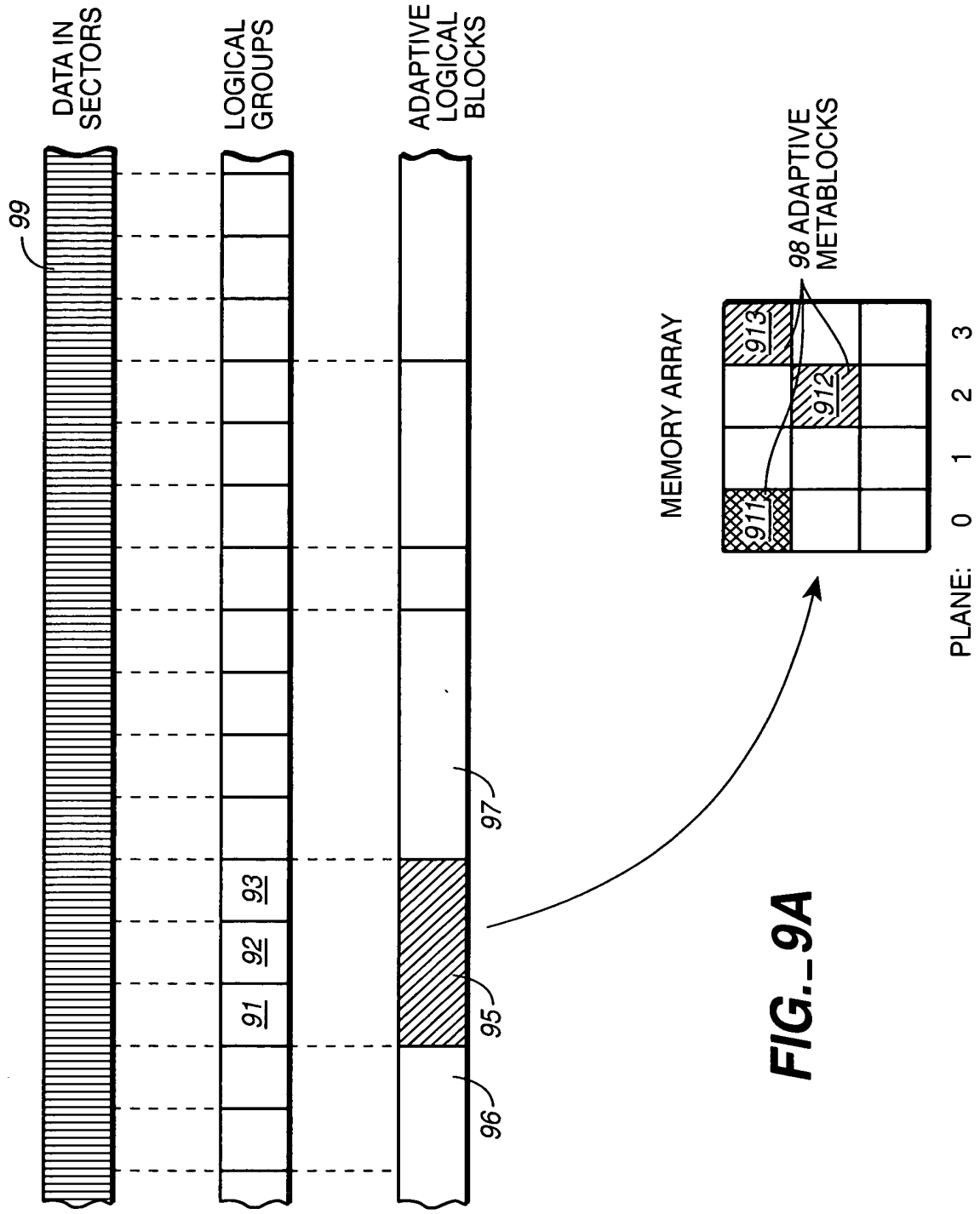
DATA IN SECTORS
LOGICAL GROUPS
ADAPTIVE LOGICAL BLOCKS
99
91
92
93
95
96
97
MEMORY ARRAY
98 ADAPTIVE METABLOCKS
911
912
913
PLANE: 0 1 2 3

FIG._9A

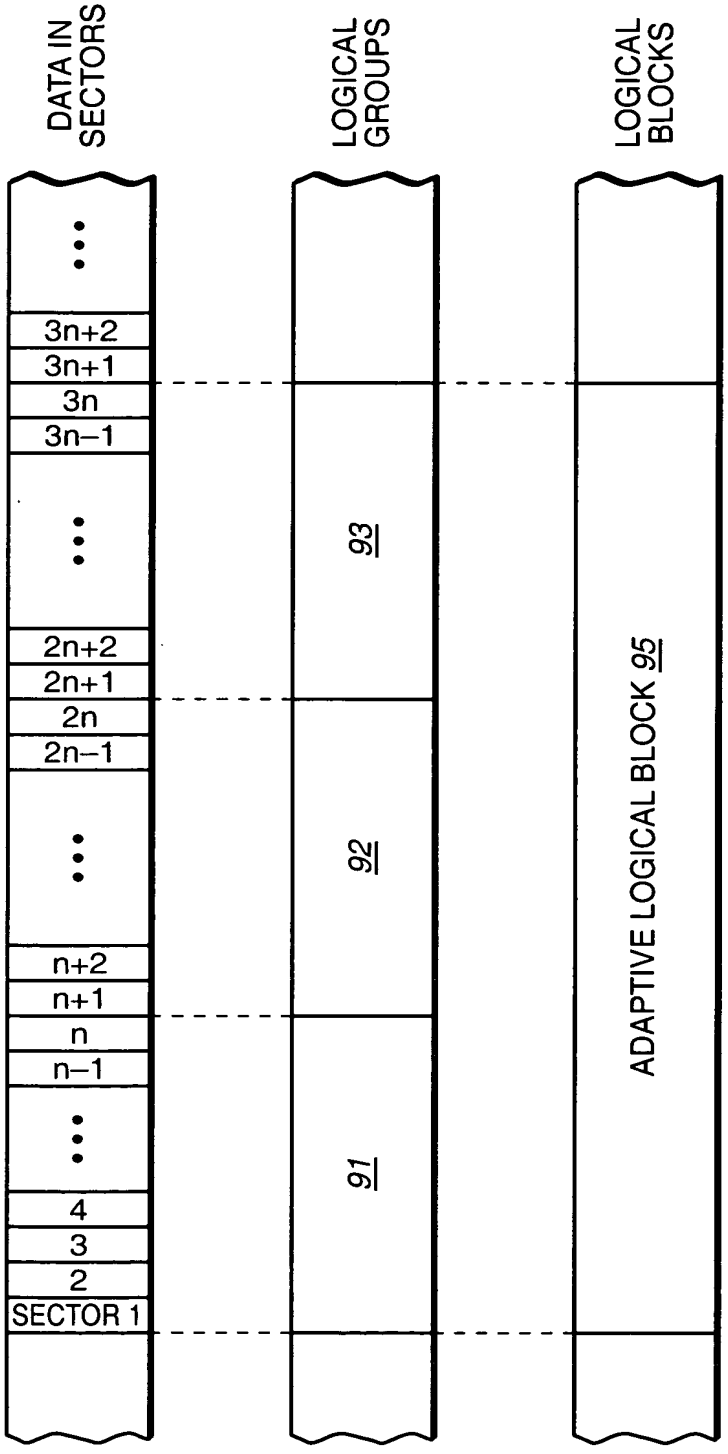
DATA IN SECTORS
LOGICAL GROUPS
LOGICAL BLOCKS
3n+2
3n+1
3n
3n–1
2n+2
2n+1
2n
2n–1
n+2
n+1
n
n–1
4
3
2
SECTOR 1
93
92
91
ADAPTIVE LOGICAL BLOCK 95

FIG._9B

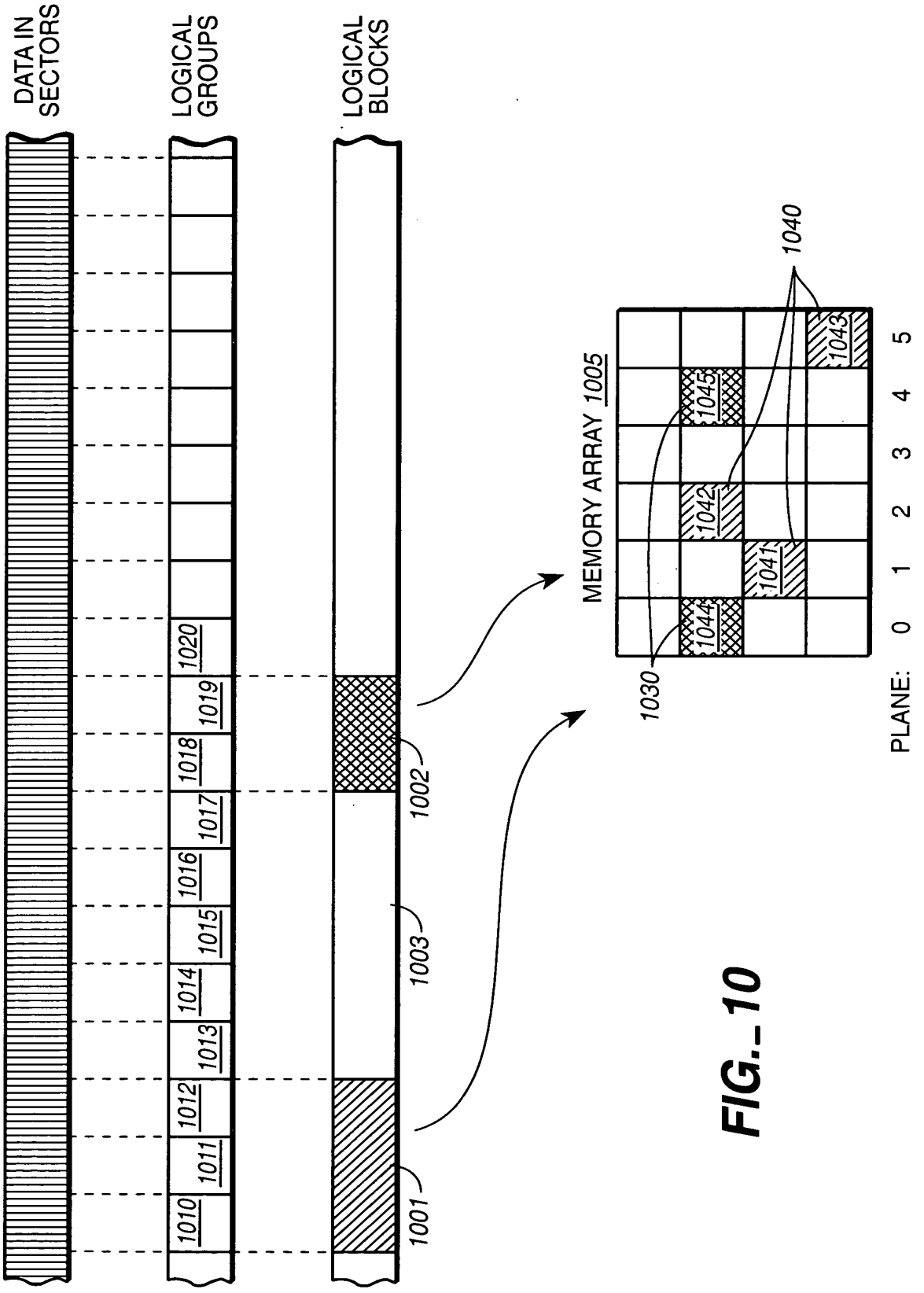
DATA IN SECTORS
LOGICAL GROUPS
LOGICAL BLOCKS
1020
1019
1018
1017
1016
1015
1014
1013
1012
1011
1010
1001
1002
1003
MEMORY ARRAY 1005
1040
1043
1045
1042
1041
1044
1030
PLANE: 0 1 2 3 4 5

FIG._10

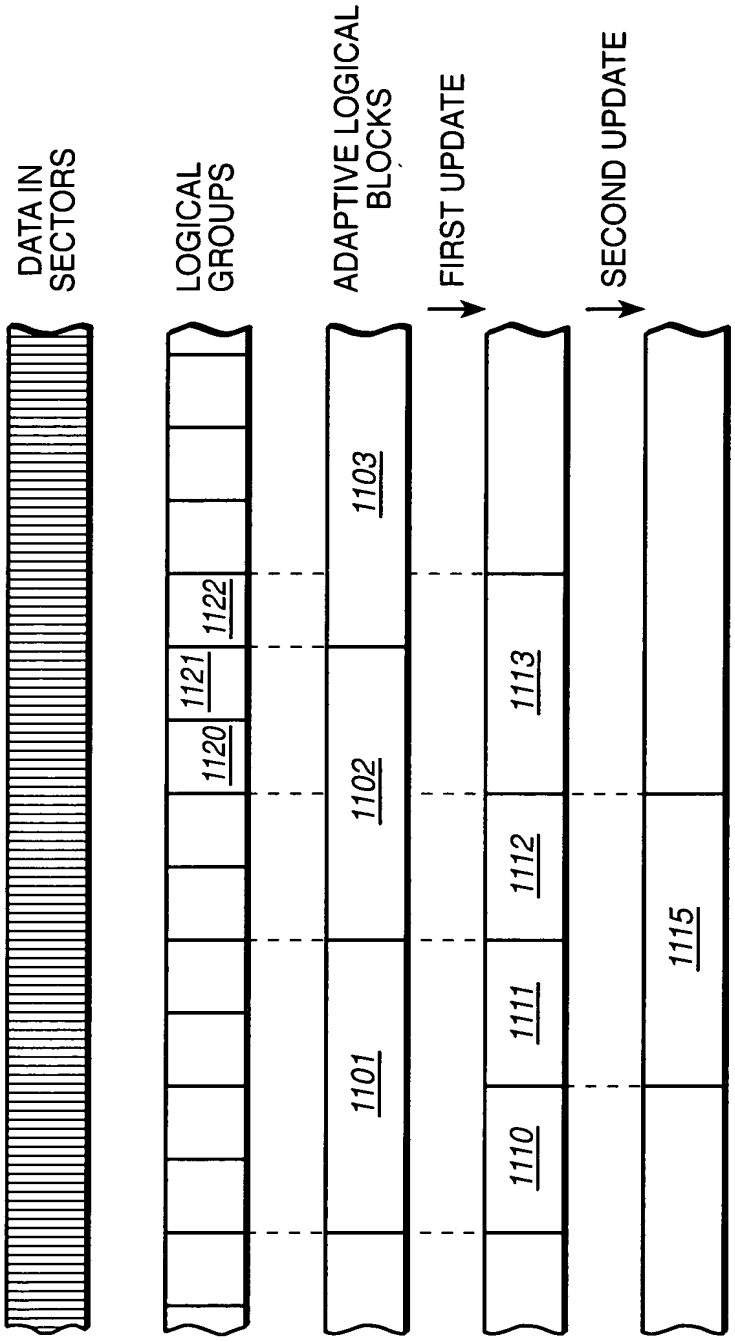
DATA IN SECTORS
LOGICAL GROUPS
ADAPTIVE LOGICAL BLOCKS
FIRST UPDATE
SECOND UPDATE
1120
1121
1122
1101
1102
1103
1110
1111
1112
1113
1115

FIG._11

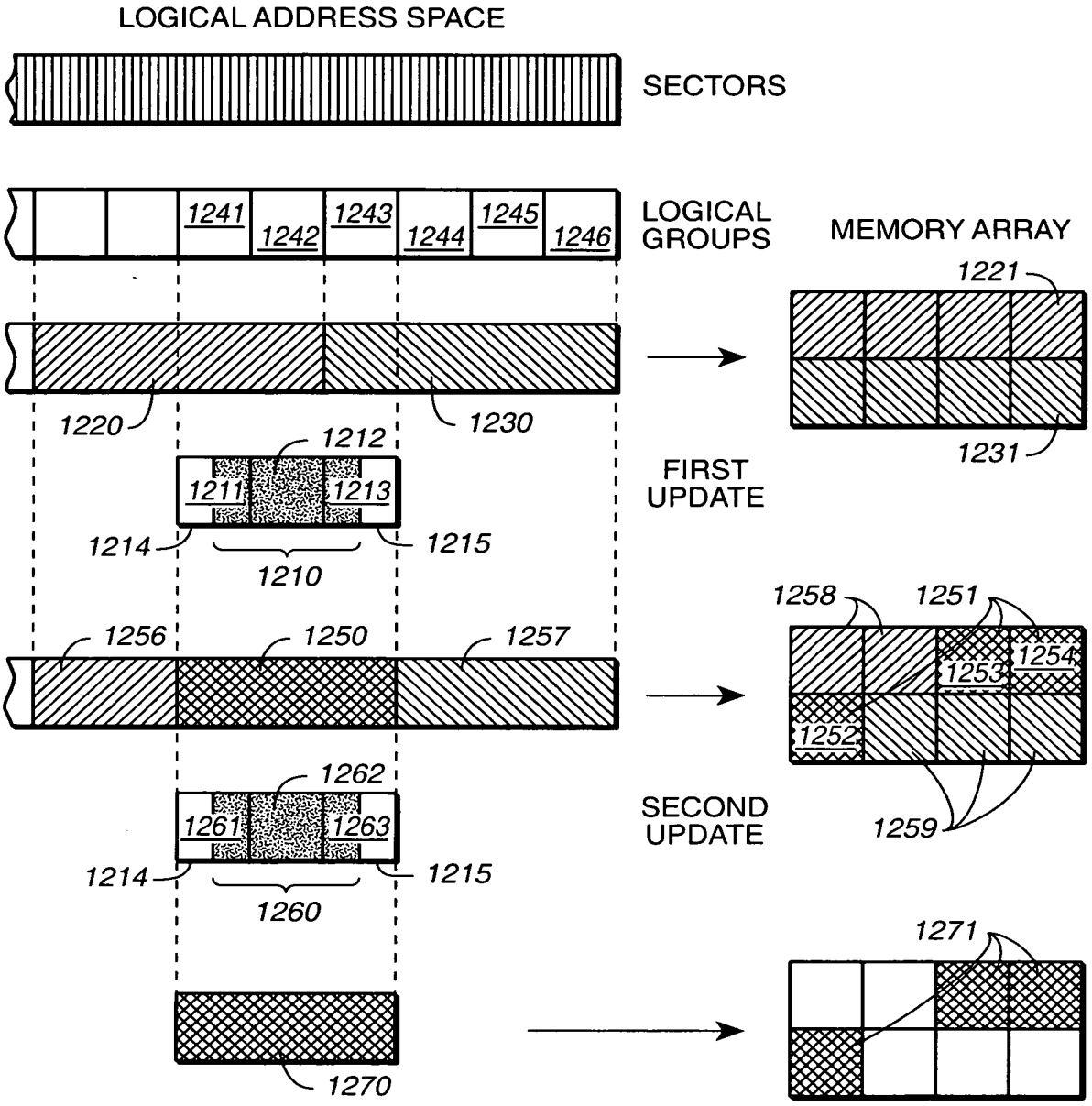
LOGICAL ADDRESS SPACE
SECTORS
1241
1242
1243
1244
1245
1246
LOGICAL GROUPS
MEMORY ARRAY
1221
1220
1230
1231
1212
1211
1213
1214
1215
1210
FIRST UPDATE
1258
1251
1256
1250
1257
1254
1253
1252
1259
1262
1261
1263
1214
1215
1260
SECOND UPDATE
1271
1270

FIG._12A

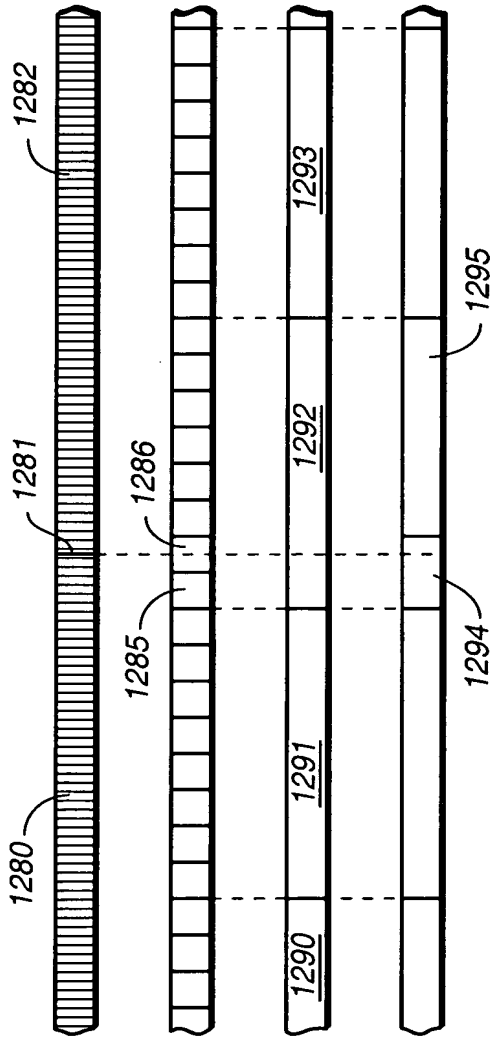

FIG._12B

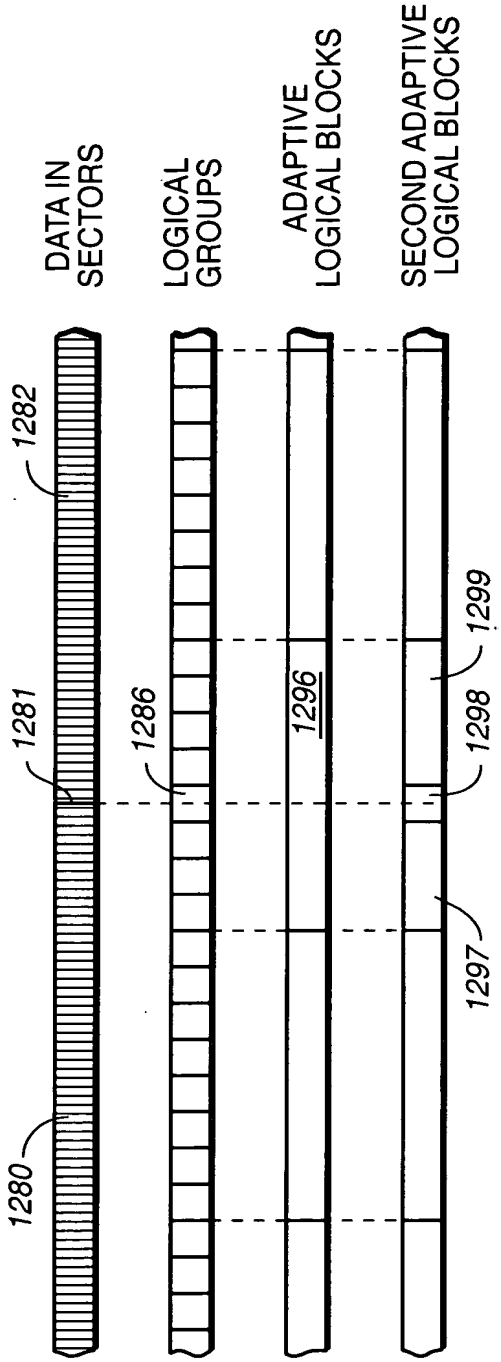

FIG._12C

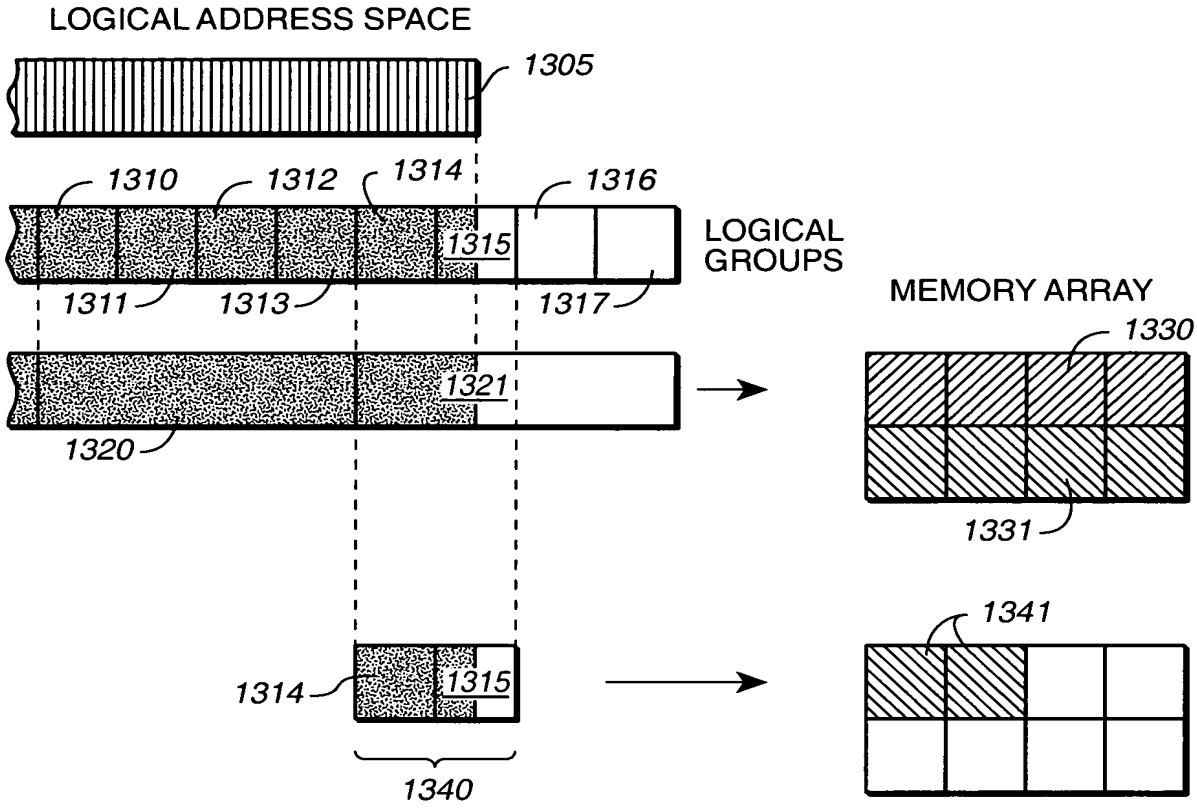
LOGICAL ADDRESS SPACE
1305
1310
1312
1314
1316
1315
LOGICAL GROUPS
1311
1313
1317
MEMORY ARRAY
1330
1321
1320
1331
1341
1314
1315
1340

FIG._13

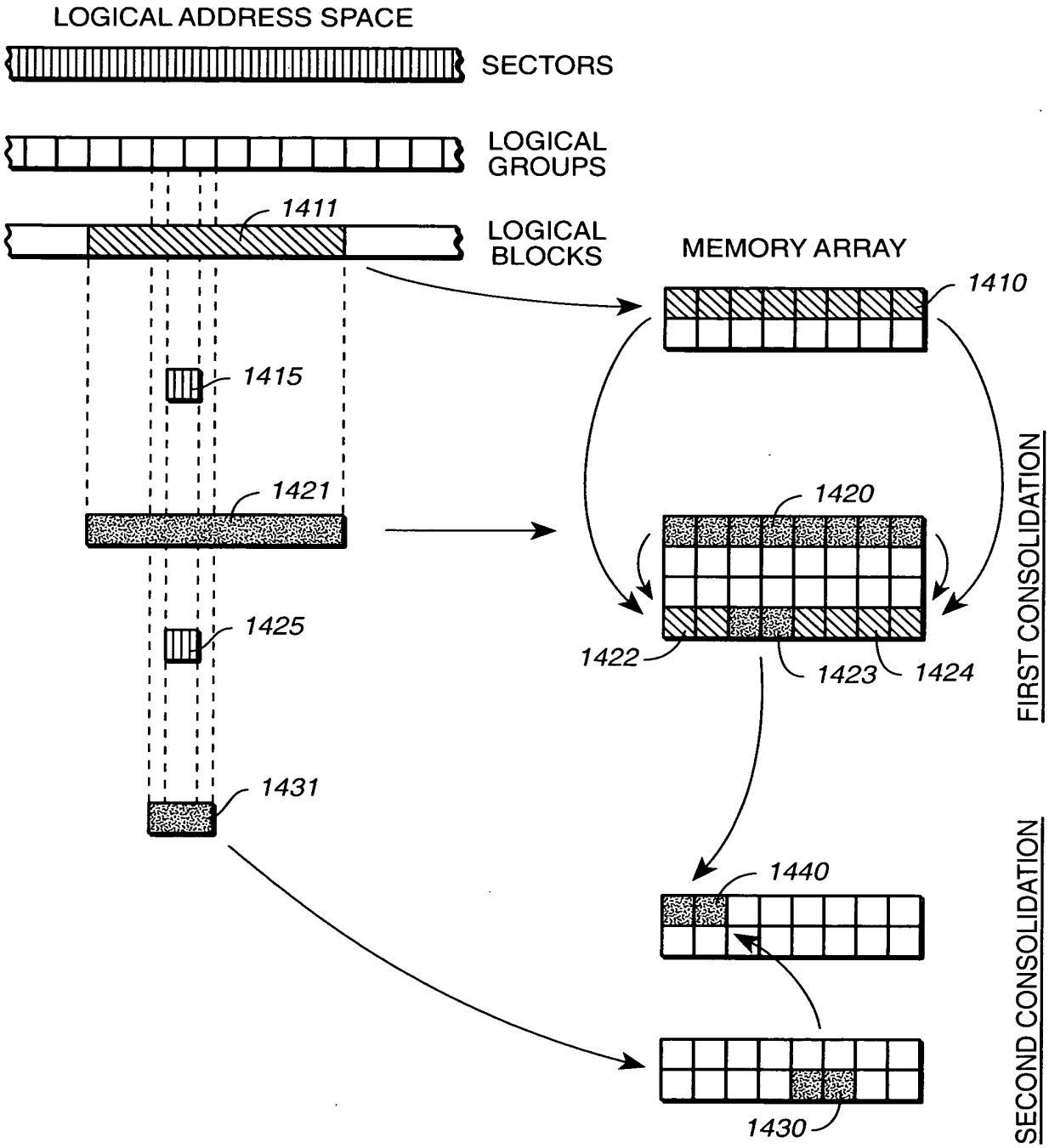
LOGICAL ADDRESS SPACE
SECTORS
LOGICAL GROUPS
LOGICAL BLOCKS
1411
1415
1421
1425
1431
MEMORY ARRAY
1410
1420
1422
1423
1424
FIRST CONSOLIDATION
1440
1430
SECOND CONSOLIDATION

FIG._14

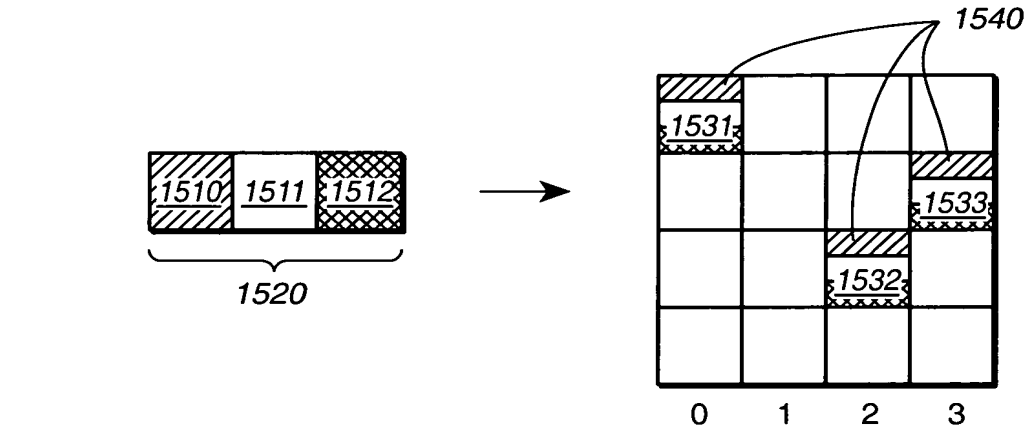

FIG._15A

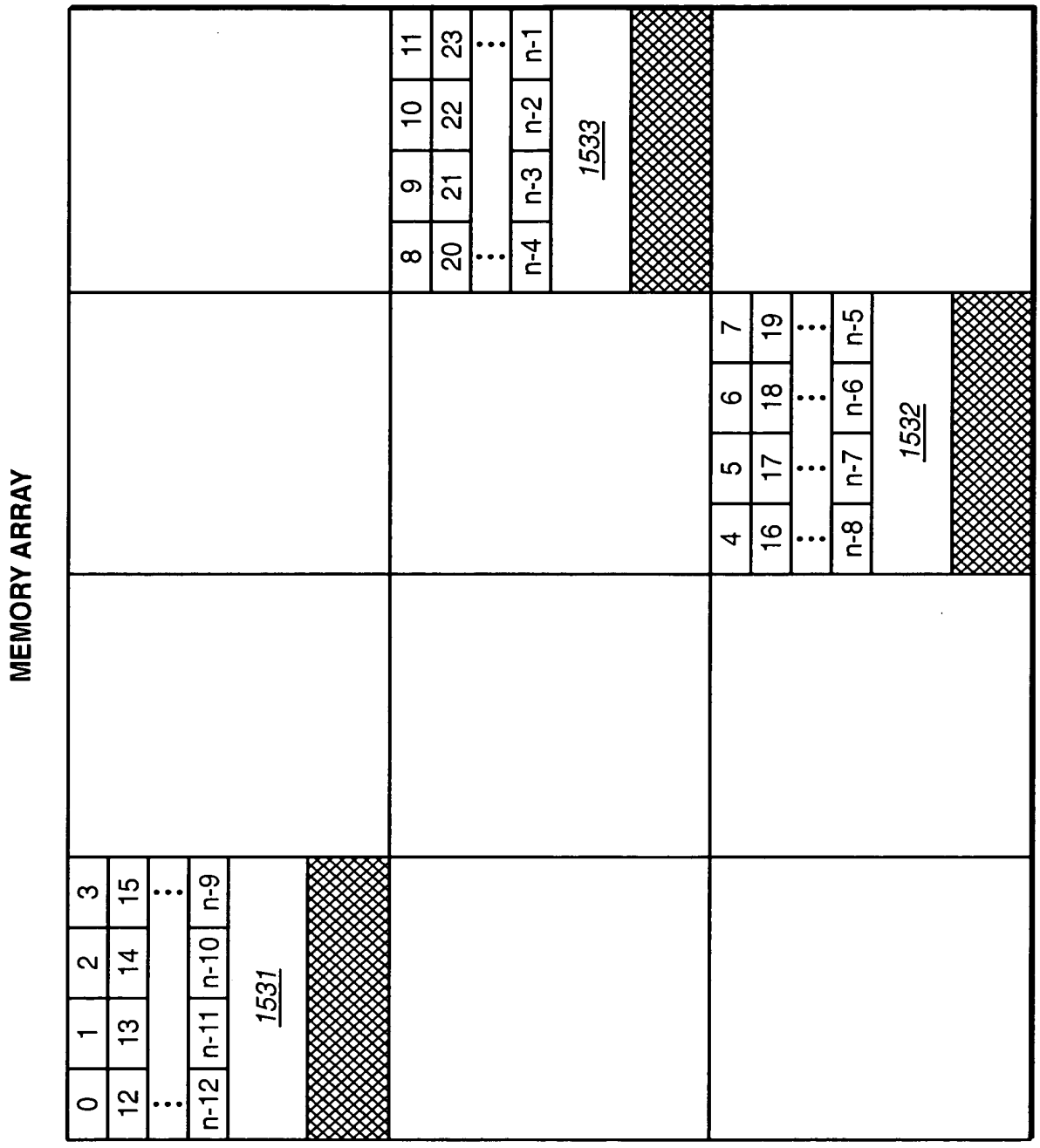
MEMORY ARRAY
PLANE 0
PLANE 1
PLANE 2
PLANE 3
1531
1532
1533
0
12
1
13
2
14
3
15
n-12
n-11
n-10
n-9
4
16
5
17
6
18
7
19
n-8
n-7
n-6
n-5
8
20
9
21
10
22
11
23
n-4
n-3
n-2
n-1

FIG._15B

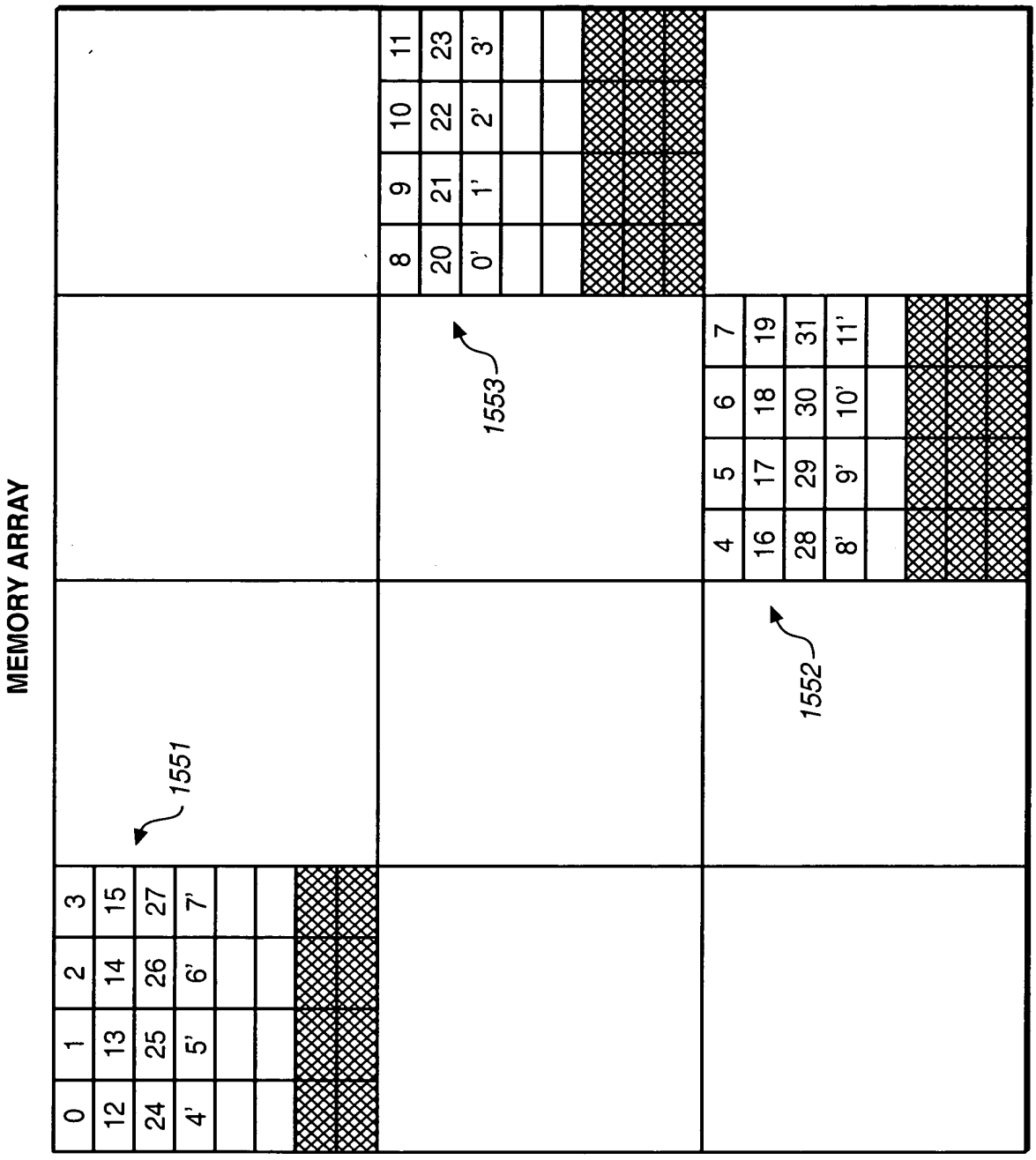
MEMORY ARRAY
1551
1552
1553
0
12
24
4'
1
13
25
5'
2
14
26
6'
3
15
27
7'
8
20
0'
9
21
1'
10
22
2'
11
23
3'
4
16
28
8'
5
17
29
9'
6
18
30
10'
7
19
31
11'

FIG._15C

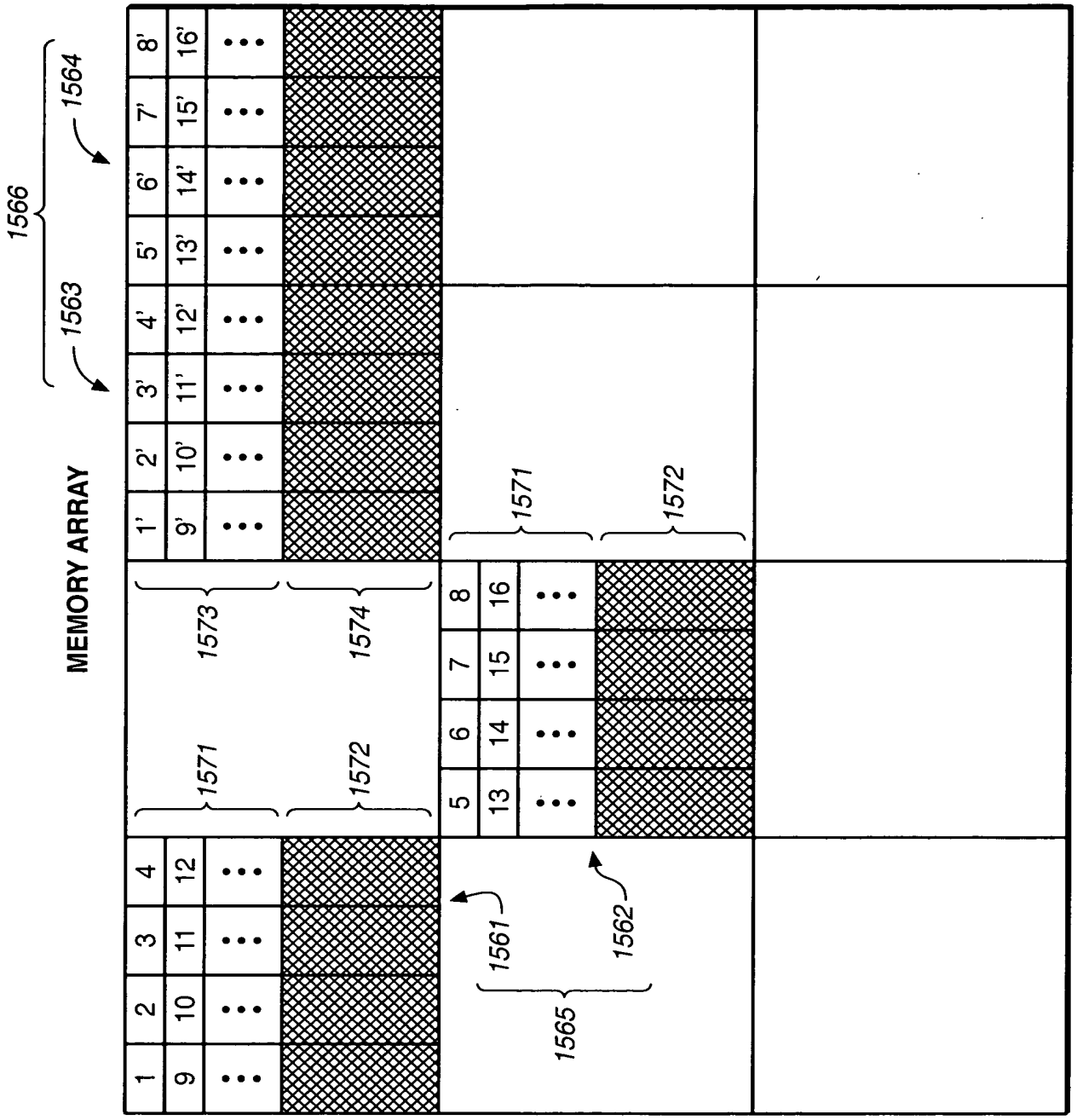
MEMORY ARRAY
1566
1564
1563
1561
1562
1565
1571
1572
1573
1574
1' 9' 2' 10' 3' 11' 4' 12' 5' 13' 6' 14' 7' 15' 8' 16'
1 9 2 10 3 11 4 12
5 13 6 14 7 15 8 16

FIG._15D

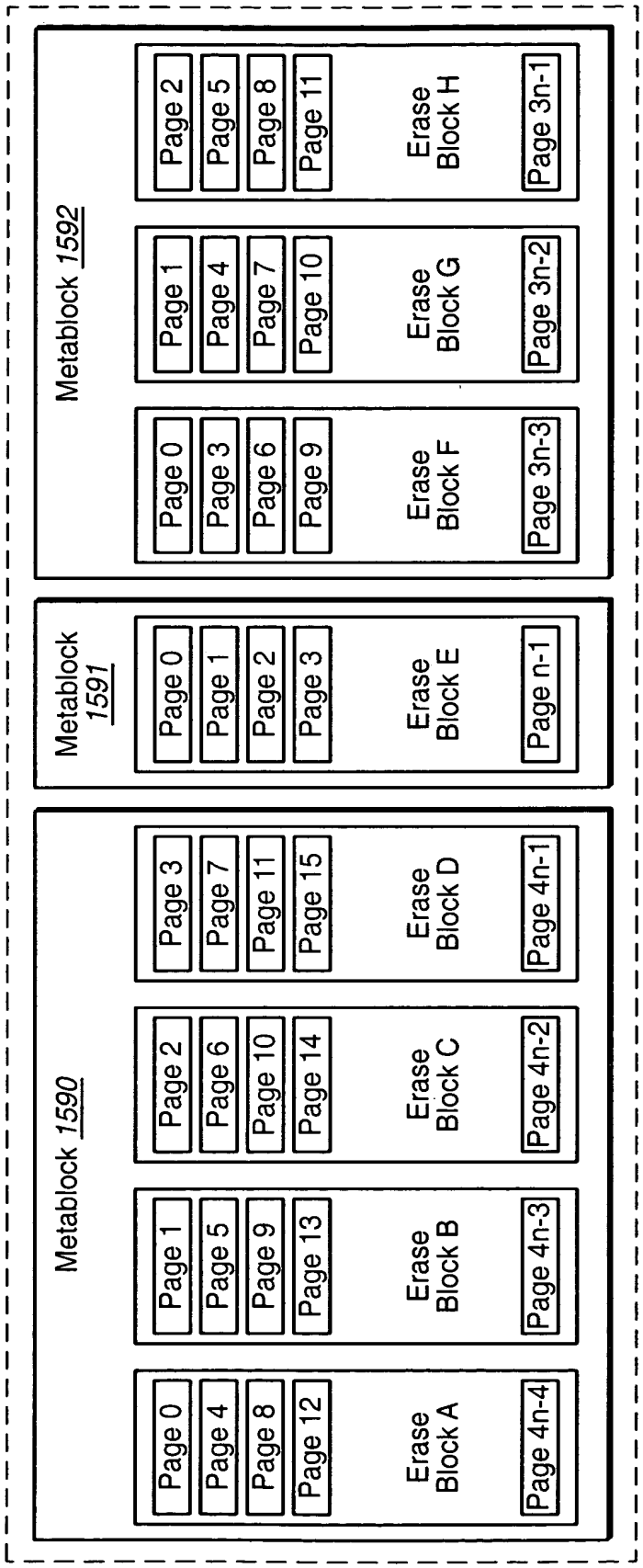
PROGRAM BLOCK
Metablock 1590
Page 0
Page 4
Page 8
Page 12
Erase Block A
Page 4n-4
Page 1
Page 5
Page 9
Page 13
Erase Block B
Page 4n-3
Page 2
Page 6
Page 10
Page 14
Erase Block C
Page 4n-2
Page 3
Page 7
Page 11
Page 15
Erase Block D
Page 4n-1
Metablock 1591
Page 0
Page 1
Page 2
Page 3
Erase Block E
Page n-1
Metablock 1592
Page 0
Page 3
Page 6
Page 9
Erase Block F
Page 3n-3
Page 1
Page 4
Page 7
Page 10
Erase Block G
Page 3n-2
Page 2
Page 5
Page 8
Page 11
Erase Block H
Page 3n-1

FIG._15E

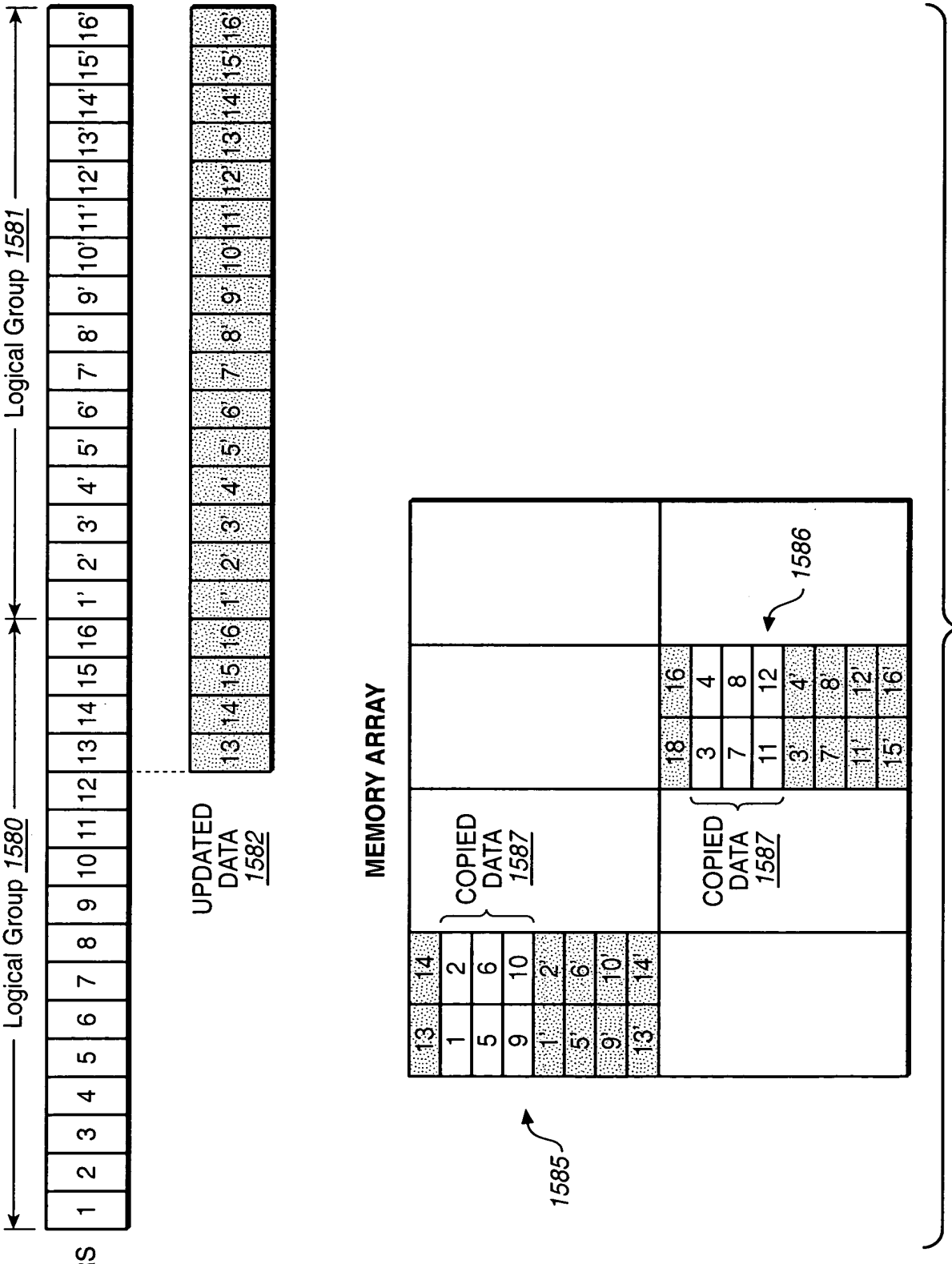
SECTORS
Logical Group 1580
Logical Group 1581
UPDATED DATA 1582
MEMORY ARRAY
COPIED DATA 1587
COPIED DATA 1587
1585
1586

FIG._15F

LOGICAL GROUP	SIZE	LOGICAL GROUP No.	BLOCK
L1	3	1	A
L2	3	2	B
L3	3	3	C

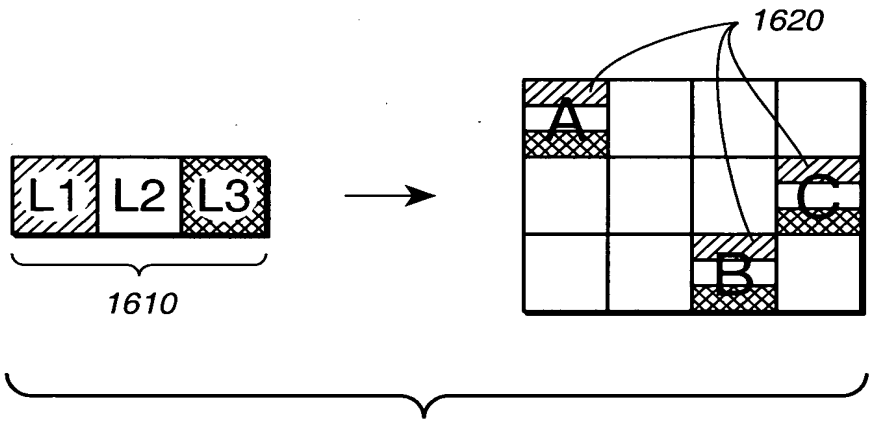

FIG._16

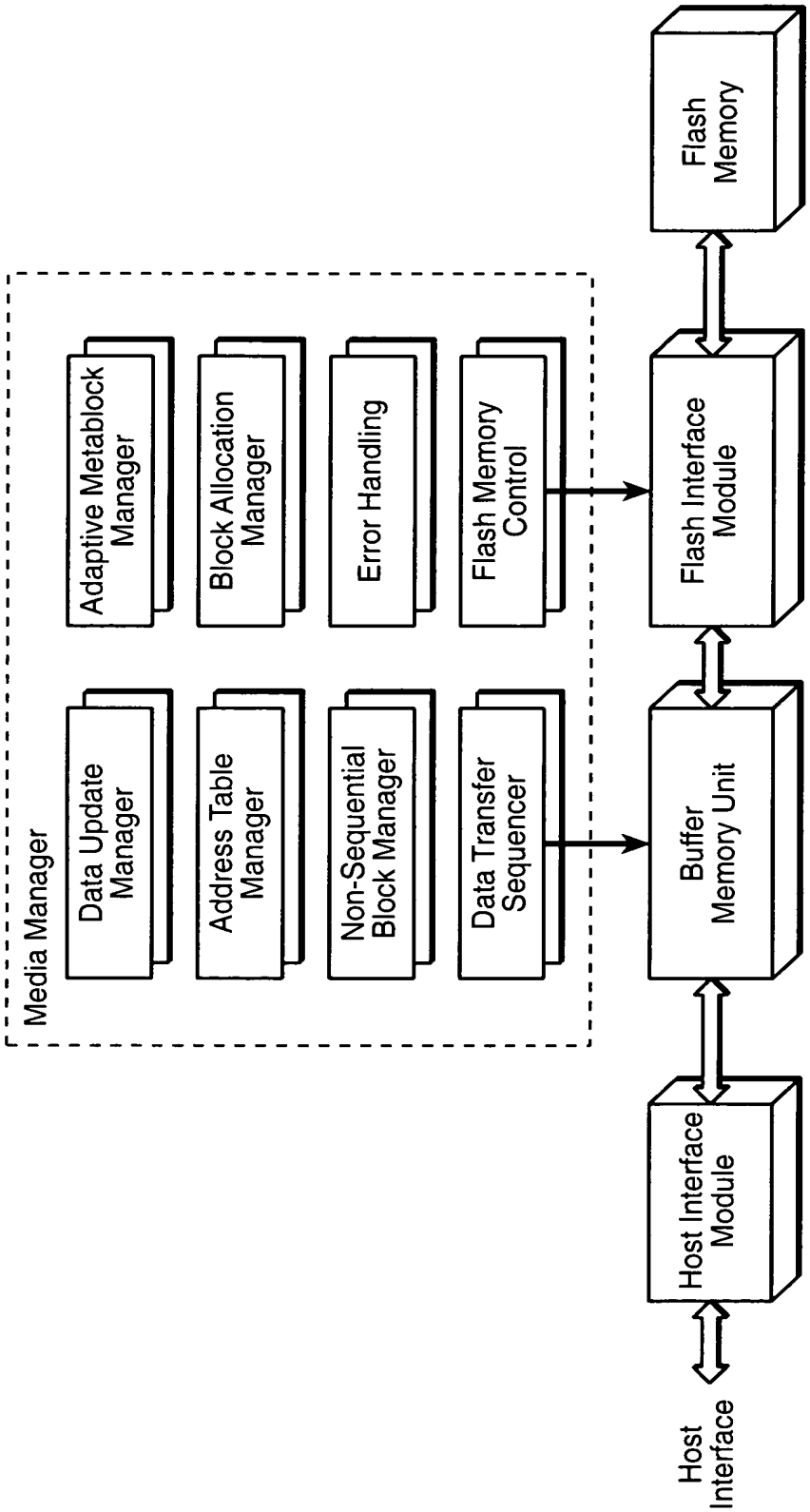
Flash Memory
Media Manager
Adaptive Metablock Manager
Block Allocation Manager
Error Handling
Flash Memory Control
Flash Interface Module
Data Update Manager
Address Table Manager
Non-Sequential Block Manager
Data Transfer Sequencer
Buffer Memory Unit
Host Interface Module
Host Interface

FIG._17

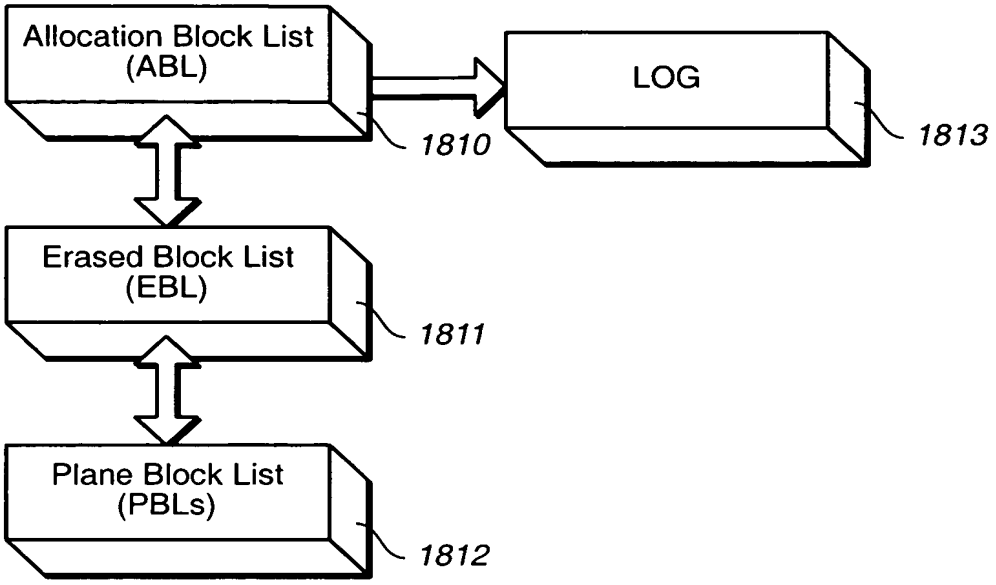

FIG._18A

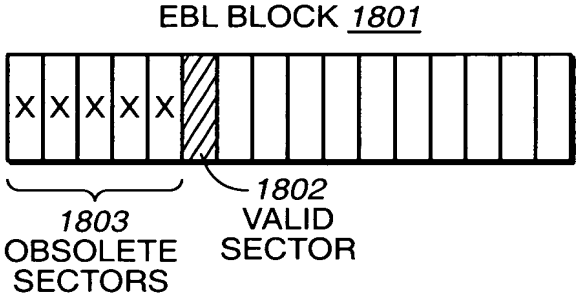

FIG._18B

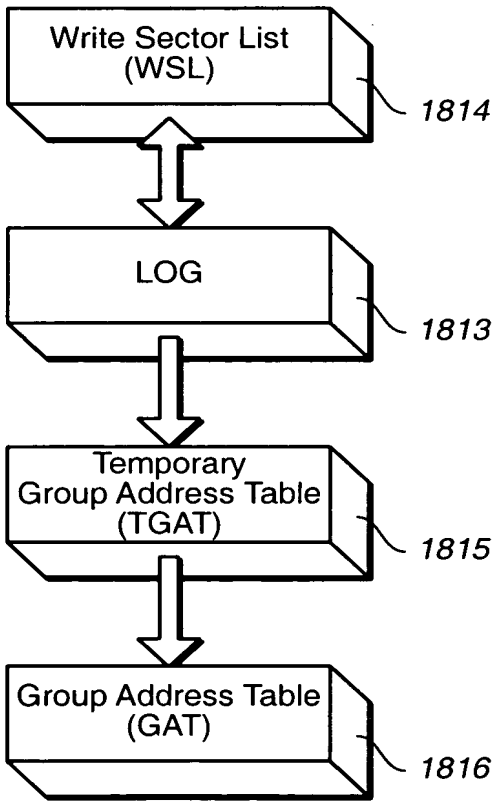

FIG._18C

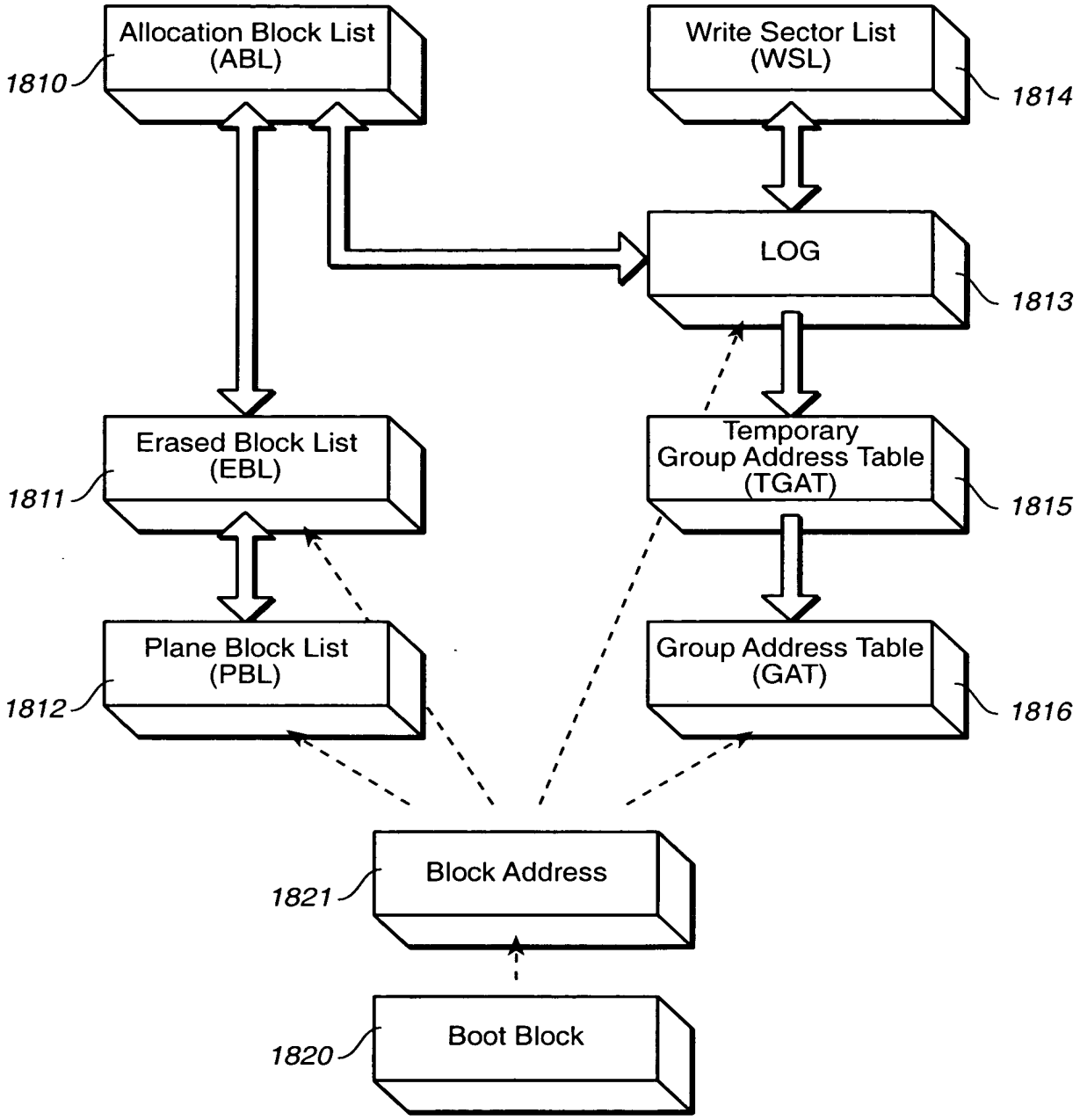
Allocation Block List
(ABL)
1810
Write Sector List
(WSL)
1814
LOG
1813
Erased Block List
(EBL)
1811
Temporary
Group Address Table
(TGAT)
1815
Plane Block List
(PBL)
1812
Group Address Table
(GAT)
1816
Block Address
1821
Boot Block
1820

FIG._18D